Attachment E – Monitoring and Reporting Program

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Attachment E – Monitoring and Reporting Program (MRP)

The Code of Federal Regulations (CFR) §122.48, requires that all NPDES permits specify monitoring and reporting requirements. The California Water Code (CWC) §§13267 and 13383 also authorize the Santa Ana Water Board to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement the federal and California regulations.

The Discharger shall implement the applicable MRP requirements as described within the discharge authorization letter issued by the Santa Ana Water Board Executive Officer.

I. GENERAL MONITORING PROVISIONS

A. Requirements Applicable to all Dischargers

1. All sampling and sample preservation shall be in accordance with the current edition of “Standard Methods for the Examination of Water and Wastewater” (American Public Health Association).

2. All laboratory analyses shall be performed in accordance with test procedures under 40 CFR 136 (revised as of September 27, 2017) "Guidelines Establishing Test Procedures for the Analysis of Pollutants," promulgated by the USEPA, unless otherwise specified in this MRP. In addition, the Santa Ana Water Board and/or USEPA, at their discretion, may specify test methods that are more sensitive than those specified in 40 CFR Part 136.

3. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Board in accordance with CWC §13176 or conducted at a laboratory certified for such analyses by the USEPA or at laboratories approved by the Santa Ana Water Board's Executive Officer.

4. Whenever the Discharger monitors any pollutant more frequently than is required by this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the discharge monitoring report specified by the Executive Officer.

5. In conformance with federal regulations 40 CFR 122.45(c), analyses to determine compliance with the effluent limitations for metals shall be conducted using the total recoverable method. For Chromium (VI), the dissolved method in conformance with 40 CFR 136 may be used to measure compliance with the Chromium (VI) limitation.

6. Minimum Level (ML) is the concentration at which the entire analytical system must give a recognizable signal and acceptable point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

7. Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analytical concentration is greater than zero, as defined in 40 CFR 136, Appendix B, revised as of April11, 2007.

8. The Discharger shall require its testing laboratory to calibrate the analytical system down to the minimum level (ML) specified in Attachment "H" for priority pollutants with effluent limitations in this Order, unless an alternative reporting level is approved by the Santa Ana Water Board's Executive Officer. When there is more than one ML value for a given substance, the Discharger shall use the ML values, and their associated analytical methods, listed in Attachment "H" that are below the calculated effluent limitation. The Discharger may select anyone of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the lowest ML value and its associated analytical method, listed in Attachment "H" shall be used. Any internal quality control data associated with the sample must be reported when requested by the Executive Officer. The Santa Ana Water Board will reject the quantified laboratory data if quality control data is unavailable or unacceptable.

9. The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

    a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

    b. Sample results less than the reported ML, but greater than or equal to the laboratory's current MDL shall be reported as "Detected, but Not Quantified," or "DNQ." The estimated chemical concentration of the sample shall also be reported.

    c. Sample results not detected above the laboratory's MDL shall be reported as "not detected" or "ND."

10. The Discharger shall submit to the Santa Ana Water Board reports necessary to determine compliance with effluent limitations and applicable wasteload allocations (WLAs) in this Order. The Discharger shall report with each sample result:

    a. The reporting level achieved by the testing laboratory; and

    b. The laboratory's current MDL, as determined by the procedure found in 40 CFR 136.

11. The Discharger shall have and implement an acceptable written quality assurance project plan (QAPP) for laboratory analyses that has been reviewed and approved by the Santa Ana Water Board's Executive Officer. Duplicate chemical analyses must be conducted on a minimum of ten percent (10%) of the samples, or at least one sample per month, whichever is greater. A similar frequency shall be maintained for analyzing spiked samples. When requested by the Santa Ana Water Board or

USEPA, the Discharger will participate in the NPDES discharge monitoring report QA performance study.

12. For receiving water monitoring and for those priority pollutants without effluent limitations, the Discharger shall require its testing laboratory to quantify constituent concentrations to the lowest achievable MDL as determined by the procedure found in 40 CFR 136. In situations where the most stringent applicable receiving water objective (freshwater or human health (consumption of organisms only)), as specified for that pollutant in 40 CFR 131.38 (*see Federal Register/ Vol.* 65, *No.* 97/ *Thursday, May* 18, *2000/ Rules and Regulations*) is below the minimum level value specified in Attachment "H" and the Discharger cannot achieve an MDL value for that pollutant below the ML value, the Discharger shall submit justification why a lower MDL value cannot be achieved. Justification shall be submitted together with monthly monitoring reports.

13. For non-priority pollutants monitoring, all analytical data shall be reported with method detection limits, as determined by the procedure found in 40 CFR 136.

14. For every item of monitoring data where the requirements are not met, the monitoring report shall include a statement discussing the reasons for noncompliance, the actions undertaken or proposed that will bring the discharge into full compliance with requirements at the earliest time, and an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Santa Ana Water Board by letter when compliance with the time schedule has been achieved.

15. The Discharger shall assure that records of all monitoring information are maintained and accessible for a period of at least five years (this retention period supersedes the retention period specified in Section IV.A. of Attachment D) from the date of the sample, report, or application. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or by the request of the Santa Ana Water Board at any time. Records of monitoring information shall include:

    a. The information listed in Attachment D - IV Standard Provisions – Records, subparagraph B. of this Order;

    b. The laboratory which performed the analyses;

    c. The date(s) analyses were performed;

    d. The individual(s) who performed the analyses;

    e. The modification(s) to analytical techniques or methods used;

    f. All sampling and analytical results, including

        (1) Units of measurement used;
        (2) Minimum reporting level for the analysis (minimum level);
        (3) Results less than the reporting level but above the method detection limit (MDL);

(4) Data qualifiers and a description of the qualifiers;
(5) Quality control test results (and a written copy of the laboratory quality assurance plan);
(6) Dilution factors, if used; and
(7) Sample matrix type.

g. All monitoring equipment calibration and maintenance records;

h. All original strip charts from continuous monitoring devices;

i. All data used to complete the application for this Order; and,

j. Copies of all reports required by this Order.

k. Electronic data and information generated by the Supervisory Control and Data Acquisition (SCADA) System.

16. The flow measurement system shall be calibrated at least once per year to ensure continued accuracy.

17. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. In the event that continuous monitoring equipment is out of service for greater than a 24-hour period, the Discharger shall obtain a representative grab sample each day the equipment is out of service. The Discharger shall correct the cause(s) of failure of the continuous monitoring equipment as soon as practicable. In its monitoring report, the Discharger shall specify the period(s) during which the equipment was out of service and if the problem has not been corrected, shall identify the steps which the Discharger is taking or proposes to take to bring the equipment back into service and the schedule for these actions.

18. Monitoring and reporting shall be in accordance with the following:

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Whenever the Discharger monitors any pollutant more frequently than is required by this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the discharge monitoring report specified by the Executive Officer.

c. A "grab" sample is defined as any individual sample collected in less than 15 minutes.

d. Daily samples shall be collected on each day of the week.

e. Monthly samples shall be collected on any representative day of each month.

f. Weekly samples shall be collected on any representative day of the week.

g. Quarterly samples: A representative sample shall be taken on any representative day of January, April, July, and October and test results shall be reported by the last day of the month following the month that the sample was taken.

h. Semi-annual samples shall be collected at the initiation of the project for the first sample and during January and July thereafter.

i. Annual samples shall be collected in accordance with the schedule in Table 1.

Table 1: Annual Sampling Schedule

Year	Month of Annual Sample Collection
2020	October
2021	January
2022	April
2023	July
2024	October
2025	January

B. Laboratory Certification

Laboratories analyzing monitoring samples shall be certified by the State Water Resources Control Board's Environmental Laboratory Accreditation Program, in accordance with the provision of CWC §13176, and must include quality assurance/quality control data with their reports.

II. MONITORING LOCATIONS

The Discharger shall establish monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order. The monitoring locations shall be located where representative samples of the discharge can be obtained, before the extracted groundwater is treated and discharged. The volume of daily extracted groundwater shall be recorded daily on a permanent log.

The monitoring locations shall be included within the discharge authorization letter issued by the Executive Officer of the Santa Ana Water Board, and shall for existing dischargers, absent direction to the contrary in the authorization letter, be the monitoring locations identified in previously submitted monitoring and reporting programs.

III. INFLUENT MONITORING REQUIREMENTS – NOT APPLICABLE

IV. STANDARD EFFLUENT MONITORING REQUIREMENTS

The following shall constitute the effluent monitoring program for discharges as applicable per the discharge authorization letter.

A. Petroleum Hydrocarbons and Other Organic Compounds

Table 2 lists the required parameters, sampling frequency, and analytical test method for petroleum hydrocarbons. Sampling and analysis are subject to the following conditions:

1. All samples must be collected as grab samples.
2. EPA Method 8015, modified for gasoline and/or diesel if present, must be used for petroleum hydrocarbons.
3. EPA Method 8260B must be used for volatile organic compounds and the entire suited of detected constituents must be reported.
4. Sampling for 1,2,3-Trichloropropane is not required if it is not present in groundwater.
5. The initial sampling frequency shall be as specified in Table 2. The sampling frequency may be adjusted based on the results.

Table 2: Effluent Monitoring Program – Petroleum Hydrocarbons and other Organic Compounds

Parameter	Unit	Sampling Frequency	Required Analytical Test Method
Total Petroleum Hydrocarbons	µg/L	Weekly	EPA Method 8015 Modified
Benzene	"	"	EPA Method 8260
Toluene	"	"	"
Xylene (total)	"	"	"
1,2,3-Trichloropropane	"	"	"
Ethylbenzene	"	"	"
Carbon Tetrachloride	"	"	"
Chloroform	"	"	"
Dichlorobromomethane	"	"	"

Table 2: Effluent Monitoring Program – Petroleum Hydrocarbons and other Organic Compounds

Parameter	Unit	Sampling Frequency	Required Analytical Test Method
Methyl Ethyl Ketone (MEK)	"	"	"
Methyl Isobutyl Ketone (MIBK)	"	"	"
Methyl tert-Butyl Ether (MTBE)	"	"	"
Naphthalene	"	"	"
Tetrachloroethylene (PCE)	"	"	"
Trichloroethylene (TCE)	"	"	"
1, 1-Dichloroethane (1,1-DCA)	"	"	"
1,2- Dichloroethane (1,2-DCA)	"	"	"
1, 1-Dichloroethylene (1,1-DCE)	"	"	"
1,2-Dichloroethylene (cis)	"	"	"
1,2-Dichloroethylene (trans)	"	"	"
1,1,1-Trichloroethane (1,1,1-TCA)	"	"	"
1,4-Dioxane	"	"	"
Tert-Butyl Alcohol (TBA)	"	"	"
Vinyl Chloride	"	"	"
Acrolein	"	"	"
Acrylonitrile	"	"	"
Ethylene Dibromide (EDB)	"	"	"
Total Phenols	mg/L	"	See Section I.A.2. and I.A.3., above
Perfluorooctanoic acid (PFOA)	ng/L	"	"
Perfluorooctane sulfonates (PFOS)	ng/L	"	"

B. Dioxins and Furans

Table 3 lists the required parameters, sampling frequency, and analytical test method for dioxins and furans. Dioxin testing is required for new dischargers only. Sampling and analysis are subject to the following conditions:

1. All samples must be collected as grab samples.

2. The Discharger shall use the USEPA approved test method 1613 for dioxins and furans.
3. The Discharger shall multiply each measured or estimated congener concentration by its respective toxic equivalency factor (TEF) as shown in Table 4 and report the sum of these values.

Table 3: Effluent Monitoring Program – Dioxins/Furans

Parameter	Unit	Minimum Sampling Frequency	Required Analytical Test Method and Minimum Level, units, respectively
2,3,7,8-TetraCDD	picograms per liter	Semi-annual (See I.A. 13.i. & 1.A.14.)	EPA Method 1613 See Section I.A.2. and I.A.3., above
1,2,3,7,8-PentaCDD	"	"	"
1,2,3,4,7,8-HexaCDD	"	"	"
1,2,3,6,7,8-HexaCDD	"	"	"
1,2,3,7,8,9-HexaCDD	"	"	"
1,2,3,4,6,7,8-HeptaCDD	"	"	"
OctaCDD	"	"	"
2,3,7,8-TetraCDF	"	"	"
1,2,3,7,8-PentaCDF	"	"	"
2,3,4,7,8-PentaCDF	"	"	"
1,2,3,4,7,8-HexaCDF	"	"	"
1,2,3,6,7,8-HexaCDF	"	"	"
1,2,3,7,8,9-HexaCDF	"	"	"
2,3,4,6,7,8-HexaCDF	"	"	"
1,2,3,4,6,7,8-HeptaCDF	"	"	"
1,2,3,4,7,8,9-HeptaCDF	"	"	"
OctaCDF	"	Semi-annual (See I.A. 9.i. & 1.A.10.)	"

Table 4: Toxic Equivalency Factors for 2,3,7, 8-TCDD Equivalents

Congener	Toxicity Equivalence Factor
2,3,7,8-TetraCDD	1
1,2,3,7,8-PentaCDD	1.0
1,2,3,4,7,8-HexaCDD	0.1
1,2,3,6,7,8-HexaCDD	0.1
1,2,3,7,8,9-HexaCDD	0.1
1,2,3,4,6,7,8-HeptaCDD	0.01
OctaCDD	0.0001
2,3,7,8-TetraCDF	0.1
1,2,3,7,8-PentaCDF	0.05
2,3,4,7,8-PentaCDF	0.5
1,2,3,4,7,8-HexaCDF	0.1
1,2,3,6,7,8-HexaCDF	0.1
1,2,3,7,8,9-HexaCDF	0.1
2,3,4,6,7,8-HexaCDF	0.1
1,2,3,4,6,7,8-HeptaCDF	0.01
1,2,3,4,7,8,9-HeptaCDF	0.01
OctaCDF	0.0001

C. Metals

Table 5 lists the required parameters, sampling frequency, and analytical test method for Miscellaneous constituents. Sampling and analysis are subject to the following conditions:

1. All samples must be collected as grab samples.

2. The Initial sampling frequency shall be as specified in Table 5. The sampling frequency may be adjusted based on the results.

Table 5: Effluent Monitoring Program – Metals

Parameter	Fraction	Unit	Minimum Sampling Frequency	Required Analytical Test Method and Minimum Level, units, respectively
Arsenic	Total Recoverable	µg/L	See Section IV.E	See Section I.A.2 & I.A.3
Cadmium	Total Recoverable	"	"	"
Copper	Dissolved & Total Recoverable	"	"	"
Lead	Dissolved & Total Recoverable	"	"	"
Mercury	Dissolved & Total Recoverable	"	"	Any USEPA-approved method that has a quantitation limit lower than the effluent limitation.
Nickel	Total Recoverable	"	"	See Section I.A.2 & I.A.3
Selenium	Total Recoverable	See Section VI.2		
Zinc	Dissolved & Total Recoverable	"	"	See Section I.A.2 & I.A.3

D. Miscellaneous Constituents

Table 6 lists the required parameters, sampling frequency, and analytical test method for Miscellaneous constituents. Sampling and analysis are subject to the following conditions:

1. All samples must be collected as grab samples.

2. Flow must be monitored using a flow meter.

3. Total Suspended Solids (TSS) monitoring is not required if all wastewater effluent will percolate prior to reaching receiving waters.

4. Monitoring for coliform organisms is only required for groundwater dewatering projects in the vicinity of active sewer lines.

5. The Initial sampling frequency shall be as specified in Table 6. The sampling frequency may be adjusted based on the results.

Table 6: Effluent Monitoring Program – Miscellaneous Parameters

Parameter	Unit	Minimum Sampling Frequency	Required Analytical Test Method and Minimum Level, units, respectively
Flow	gpd	Daily for the 1st week, weekly thereafter	See Section I.A.3., above
Perchlorate	µg/L	Weekly	See Section I.A.2. and I.A.3., above
Total Residual Chlorine[1]	mg/L	Weekly for the 1st month, monthly thereafter	"
Methylene Blue Activated Substances (MBAS)	mg/L	Monthly	"
Oil and Grease	mg/L	"	"
Coliform Organisms[2]	MPN	"	"
Total Inorganic Nitrogen	mg/L	"	"
Total Phosphorous	mg/L	"	"
Sulfide	mg/L		
Sulfate	mg/L	"	"
Chloride	mg/L	"	"
Total Organic Carbon	mg/L	"	"
Total Suspended Solids	mg/L	"	"
pH	---	"	"
Temperature	°F	"	"
Dissolved Oxygen	mg/L	"	"
Hardness	mg/L	"	"
Total Alkalinity	mg $CaCO_3$/L	"	"
Total Dissolved Solids	mg/L	Annual	
Electrical Conductance	µmhos/cm	See paragraph IV.E., below	"

[1] *If chlorine is used for treatment or disinfection of wastes.*

Table 6: Effluent Monitoring Program – Miscellaneous Parameters

Parameter	Unit	Minimum Sampling Frequency	Required Analytical Test Method and Minimum Level, units, respectively
Priority Pollutants other than those in previous tables above (see Paragraph IV.3., below and Attachment "G")	µg/L	Once during the 1st year & upon renewal	"
Toxicity Testing	Pass/ Fail	At project initiation & annually thereafter	(see Section V., below)

E. Minimum Frequency of Sampling and Analysis

Unless otherwise specified in Table 2 through Table 7, the minimum sampling and analysis frequency for constituents other than mercury shall be as specified in E.1 and E.2 below. Minimum sampling and analysis frequencies for mercury are specified in E.3 below.

1. Discharge Rates of One Million Gallons per Day or More

For projects that result in discharges of one million gallons per day (rngd) or more, daily grab samples for four consecutive days shall be taken and analyzed individually for the constituent required to be monitored. Subsequent samples shall be taken and analyzed once quarterly, unless directed otherwise by the Santa Ana Water Board's Executive Officer. If the discharge does not last for more than a day, one composite sample taken for the duration of the discharge shall be analyzed.

2. Discharge Rates Less than One Million Gallons per Day

For all other projects that result in discharges of wastewater of less than one mgd, weekly sampling and analyses shall be conducted for the first month. Subsequent sampling and analyses shall be conducted once quarterly, unless directed otherwise by the Santa Ana Water Board's Executive Officer.

3. Mercury Monitoring

a. Dischargers with mercury effluent limitations that are authorized to discharge at a rate equal to or greater than five million gallons per day are required to conduct routine total mercury monitoring in the effluent at a frequency no less than once each calendar quarter for the duration of the permit.

[2] *Only for groundwater dewatering projects in the vicinity of active sewer lines.*

b. Dischargers with mercury effluent limitations that are authorized to discharge at a rate less than five million gallons per day are required to conduct routine total mercury monitoring in the effluent at a frequency no less than once each year for the duration of the permit.

c. Dischargers without mercury effluent limitations are required to conduct total mercury monitoring in the effluent at a frequency of no less than once per permit term.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Test Methods

The Discharger shall conduct acute toxicity testing as specified in Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (EPA/821-R-02-012, October 2002). Using a control and 100% effluent, static renewal survival (pass/fail) tests for 96 hours shall be conducted using the two test species specified in Table 7 below corresponding to the onsite groundwater salinity, for the first required annual test under this permit. Based on the results, the Discharger shall determine the most sensitive test species. For the required succeeding toxicity monitoring, the Discharger shall use the most sensitive species with prior approval from the Santa Ana Water Board Executive Officer. The Discharger shall submit documentation supporting the Discharger's determination of the most sensitive test species. The effluent tests must be conducted concurrent with reference toxicant tests. The effluent and reference toxicant tests must meet all test acceptability criteria as specified in the acute manual (*Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms" EPA/821-R-02-012, October 2002).* If the test acceptability criteria are not achieved, then the discharger must re-sample and re-test within 14 days. The test results must be reported according to the acute manual chapter on Report Preparation and shall be attached to the monitoring reports. The use of alternative methods for measuring acute toxicity may be considered by the Executive Officer on a case-by-case basis.

B. Procedure When Effluent Fails Toxicity Testing

In the event that the effluent fails the required annual toxicity test, the Discharger shall stop any discharge of wastewater to waters of the U.S. and shall retest within 14 days of receiving the notice of failure and shall determine the cause of the failure. The Discharger shall stop any discharge of wastewater to waters of the U.S. until such time that the cause of toxicity is determined and appropriately addressed. Commencement of any discharge shall be with prior approval by the Executive Officer.

Table 7: Toxicity Test Species

Salinity of the Effluent or Receiving Water	Test Species	Test
Salinity less than 1,000 mg/L (one part per thousand)	Fathead minnow: *Pimephales promelas*	Larval survival test
	Water flea: *Ceriodaphnia dubia*	Survival test
Salinity equal to or greater than 1,000 mg/L (one part per thousand)	Silverside: *Menedia beryllina*	Survival test
	Pacific mysid: *Holmesimysis costata*	Survival test

VI. SELENIUM EFFLUENT LIMIT COMPLIANCE MONITORING

A. Individual Action Plan Monitoring

For Regulated Parties[3] implementing an Individual Action Plan, a monitoring program must be submitted as part of the Individual Action Plan, which is defined in the Implementation section of the Selenium TMDLs (Table 4.c.Se.2 of the Basin Plan; see Tables 6 and 7 of this Order). The Individual Action Plan monitoring program must identify how the discharger will demonstrate that their discharge meets the selenium effluent limits identified in this Order.

Where an Individual Action Plan opts to attain the selenium effluent limits through an approved Offset and Trading Program, at a minimum, monitoring must be consistent with the monitoring requirements specified in Section VI.B.3 below.

Where an Individual Action Plan opts to attain the selenium effluent limits at the point of discharge, at a minimum (until it has been shown that the discharge meets the selenium effluent limits), the monitoring must include water column monitoring for total selenium and flow (end of pipe). The monitoring program requirement can be satisfied individually (e.g., a separate and individual monitoring plan) or can be incorporated into the Regional Monitoring Program specified in Section VI.B below. Where an Individual Action Plan opts to attain the selenium effluent limits by sewering the discharge, monitoring must include flow measurements (flow that is being sewered)[4] and document that no discharge to surface waters is occurring.

[3] *The term "Regulated Party," as defined in the Selenium TMDLs Implementation Plan, is included in the list of definitions in Attachment A. This definition also specifies the entities considered as "Other NPDES Permittees," and "MS4 Permittees."*

[4] *The sewering agency will require certain monitoring to be conducted of water that enters the sewer system. This monitoring data may be utilized to fulfill, fully or in part, monitoring requirements for an Individual Action Plan.*

B. Regional Monitoring Program

For Regulated Parties implementing a BMP Strategic Plan, a Regional Monitoring Program must be developed and submitted as part of the applicable BMP Strategic Plan. The Regional Monitoring Program must be submitted to the Executive Officer for approval[5], consistent with the schedule identified in Table 4.c.Se.2 of the Basin Plan (Tables 6 and 7 in this Order) and implemented upon that approval. A Regional Monitoring Program must be developed for each subwatershed area (San Diego Creek, Santa Ana-Delhi Channel, and Big Canyon Wash). The monitoring programs can be developed individually for each subwatershed or combined to address multiple subwatersheds (resulting in a minimum of one (1) and a maximum of three (3) monitoring programs) consistent with the applicable BMP Strategic Plan(s).

To be considered for approval by the Executive Officer, each Regional Monitoring Program must include the following elements:

- TMDL Evaluation Monitoring
- BMP Effectiveness Monitoring
- Offset and Trading Program Monitoring[6]
- Source Assessment Monitoring
- Other Considerations
- Special Studies
- Quality Assurance and Quality Control Measures

The above monitoring elements reflect the various aspects of these selenium TMDLs that are supported, informed and/or evaluated by monitoring in the watershed. In order to ensure integration of these elements and the various components of these selenium TMDLs within each watershed, the monitoring requirements are contained within one unified document, the Regional Monitoring Program.

Regulated Parties may, and are encouraged to, integrate the various monitoring requirements as appropriate and necessary (e.g., one monitoring location may provide data for multiple purposes). Additionally, Regulated Parties may, and are encouraged to, integrate or coordinate the monitoring requirements for this TMDL with other existing monitoring efforts (e.g., other TMDLs, the MS4 Permit, other regional monitoring programs, etc.).

The specific requirements for each element of the Regional Monitoring Program are detailed below.

[5] *It is expected that prior to Executive Officer approval, input and recommendations from the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife will be solicited concerning the proposed monitoring, particularly biological monitoring conducted as part of Assessment Area monitoring (see below).*

[6] *Only required where the Regulated Parties opt to implement an Offset and Trading Program.*

1. TMDL Evaluation Monitoring

The purpose of the TMDL evaluation monitoring is to assess progress toward the attainment of the WLAs, LAs, and the tissue-based numeric targets[7], consistent with CWC §13242.

The TMDL evaluation monitoring is divided into two categories:

a. Assessment Point Monitoring

Assessment Point Monitoring will be used to assess, through water column monitoring, whether the WLAs and LAs are being attained. The assessment point within each of the subwatershed/channel areas is as follows:

- San Diego Creek subwatershed: San Diego Creek at Campus Drive
- Santa Ana-Delhi Channel: Santa Ana-Delhi Channel upstream of Irvine Ave
- Big Canyon Wash subwatershed: Big Canyon Wash at the outfall to Upper Newport Bay at Back Bay Drive.

The monitoring parameters for the Assessment Point Monitoring must consist of the following:

- Water column: selenium (total and dissolved)[8]
- Flow[9]

The frequency of sample collection must be sufficient to evaluate the WLAs and LAs (including the seasonal evaluation) and must be specified in the Regional Monitoring Program.

b. Assessment Area Monitoring

Assessment area monitoring will be used to assess, through bird egg and fish tissue samples, attainment of the tissue-based numeric targets. Tissue samples must be collected throughout the subwatershed area. For instances where sufficient tissue samples cannot be collected from an assessment area, a surrogate parameter (e.g., macroinvertebrates such as crayfish; reptiles; amphibians) may be used. The surrogate parameter must be proposed in the Regional Monitoring Program and, therefore, is subject to approval by the Executive Officer. The purpose of the surrogate parameter is to allow for an alternative assessment, as appropriate, of the tissue-based numeric targets to avoid a default presumption of attainment or lack of attainment due to an insufficient number of tissue samples. Given that numeric targets have not

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[7] *The monitoring program's purpose is not to determine permit compliance. Permit compliance will be determined as described in the TMDLs and Allocations section and Implementation Plan section.*

[8] *Selenium species in addition to total and dissolved selenium (collected at same time as assessment area monitoring is being conducted) should be considered but are not required for all monitoring events or locations.*

[9] *To be measured at a nearby gauge or estimated at the point of sample collection if a nearby gauge is not present (e.g., Big Canyon Wash).*

been established for these surrogate parameters, they would be used for informative purposes (e.g., to observe trends over time) rather than to determine whether the TMDLs have been attained. Where sufficient tissue samples are not available, these selenium TMDLs do not default to the assessment of water column (per the Assessment Point Monitoring) to determine attainment of the TMDLs. Additionally, where sufficient tissue samples are not available, these selenium TMDLs do not default to a determination that the TMDLs have been attained.

The assessment areas are as follows:[10]

- San Diego Creek subwatershed
  i. Peters Canyon Wash
  ii. San Diego Creek
  iii. Off-Channel Wetlands (IRWD Constructed Treatment Wetlands and San Joaquin Marsh Reserve (UCI Wetlands))
- Santa Ana-Delhi Channel
  i. Santa Ana Gardens Channel
  ii. Santa Ana Delhi Channel (upstream of proposed diversion)
- Big Canyon Wash subwatershed
  i. Harbor View Nature Park
  ii. Big Canyon Country Club Golf Course Pond 4 or 5
  iii. Big Canyon Nature Park

At a minimum, the monitoring parameters for the Assessment Area Monitoring must consist of the following:

- **Bird Egg Tissue (individual eggs, contents only)**: total selenium; targeted species include shorebirds such as avocets or stilts (invertivorous birds), grebes (omnivorous or insectivorous birds), coots (omnivorous or herbivorous birds) and terns (piscivorous birds); since not all species are expected to be available in any given year within each subwatershed area, the monitoring program must be flexible with regard to the species targeted.
- **Fish Tissue (composite, whole-body tissue analyses)**: total selenium; targeted species include juvenile and adult fish of the *Centrarchidae* family (e.g., bluegill, largemouth bass) and smaller fish such as red shiners or mosquito fish; since not all species are expected to be available in any given year within each subwatershed area, the monitoring program must be flexible with regard to the species targeted.
- **Surrogate Parameters:** Field experience indicates that locations with limited habitat (e.g., Upper Peters Canyon Wash, Santa Ana-Delhi Channel, and Big Canyon Wash) may not reliably provide fish or bird eggs for collection. Therefore, the Regional Monitoring Program must identify appropriate surrogate parameters (e.g., larger macroinvertebrates, such as crayfish (tails only,

[10] *Each subwatershed, in its entirety, is the assessment area. The sub areas within the subwatersheds are identified to ensure that sampling occurs specifically within at least one of these areas.*

exoskeleton removed), reptiles such as non-native turtles, or amphibians such as non-native frogs) for sampling. At a minimum, surrogate tissue samples will be analyzed for total selenium and percent solids.

The frequency of sample collection must be sufficient to evaluate the tissue-based numeric targets, provided sufficient samples can be collected during target sample collection times, and must be specified in the Regional Monitoring Program. [11] At a minimum, an attempt to collect samples must be conducted annually in each assessment area, unless and until the Executive Officer determines that sufficient tissue data has been obtained to adequately characterize conditions and a lower sample collection frequency is warranted. Bird egg collection should be conducted during the nesting season (generally March through August). Fish collection should be at the same time of year to capture the potential effects of fish as bird dietary items and for effects to fish reproduction (common timing for most of the target species).

2. BMP Effectiveness Monitoring

The purpose of the BMP effectiveness monitoring is to assess the effectiveness of the BMPs that have been implemented pursuant to the BMP Strategic Plan(s). Changes in selenium concentrations in receiving waters, fish tissue, and bird eggs as a result of BMPs can be evaluated on either a project-specific or regional basis (e.g., the assessment area), depending upon the location and scale of the BMP. In addition, depending upon the type of BMP implemented, additional parameters or factors may be warranted (e.g., selenium speciation; bacteriological monitoring). Therefore, the monitoring that is appropriate to assess BMP effectiveness will be project-specific. However, to ensure integration of the goals and purposes of the BMP Strategic Plan and the Regional Monitoring Program, a project-specific monitoring plan must be developed for each project. The project-specific monitoring can be approved either through the BMP Strategic Plan approval process (including periodic updates) or through the Regional Monitoring Program approval process (including periodic updates).

Each project-specific monitoring plan must be appended to the overall Regional Monitoring Program and address the following:

- Baseline conditions prior to the project;
- Monitoring locations and rationale for the monitoring locations. At a minimum, two (2) monitoring locations must be established: one immediately upstream of the BMP and one immediately downstream of the BMP. If warranted by the type of BMP implemented or its proximity to sensitive or important habitat, another monitoring location may be added

[11] *It is expected that prior to Executive Officer approval, input and recommendations from the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife will be solicited concerning the proposed monitoring, particularly biological monitoring conducted as part of Assessment Area monitoring (see below).*

further downstream of the BMP[12]. For diversion projects, monitoring upstream is not required (though monitoring of the diverted water is required, in order to quantify the selenium removed by the diversion[13]). For all types of BMPs, downstream monitoring may be coordinated with other monitoring locations where appropriate;

- Monitoring parameters, which at a minimum must include selenium in water (total and dissolved)[14];
- Frequency with which each selenium reduction BMP will be monitored once the BMP is constructed and fully functioning. Monitoring must be sufficient to determine performance and selenium reduction effectiveness; and
- Duration of the BMP effectiveness monitoring.

3. Offset and Trading Program Monitoring

The purpose of the offset and trading program monitoring component is to provide the data that verify the generation of credits, and to conduct assessments on the effects of the offsets and/or trades on receiving water conditions to prevent localized impacts. This monitoring element only applies to Regulated Parties that opt to participate in the Offset and Trading Program.

For Regulated Parties who are generating credits via a BMP, at a minimum, monitoring must include the following[15]:

- Influent water to the BMP (prior to treatment)
- Water Column: selenium (total and dissolved)
- Flow
- Effluent water from the BMP (after treatment)
- Water Column: selenium (total and dissolved)[16]
- Flow

For Regulated Parties who are generating credits via a diversion project, at a minimum, monitoring must include the following:

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[12] *The same monitoring location(s) can potentially be utilized for different aspects of the Regional Monitoring Program (e.g., a TMDL Evaluation location can also serve as a BMP effectiveness monitoring location), provided that the monitoring location will provide the necessary information. The intent of requiring all monitoring aspects in one Regional Monitoring Program is to integrate all of the requirements such that the program is efficient, effective, and practical.*

[13] *The sewering agency will require certain monitoring to be conducted of water that enters the sewer system. This monitoring data may be utilized to fulfill, fully or in part, monitoring requirements for the diversion projects.*

[14] *As determined on a project specific basis, the monitoring parameters may also include, if warranted, selenium species: selenate, selenite, and organic selenium.*

[15] *Note that the BMP itself will be assessed under the requirements specified in the BMP effectiveness monitoring aspect of the Regional Monitoring Program. The requirements specified here are specifically designed to assess the generation of credits for the Offset and Trading Program.*

[16] *Additional monitoring parameters may be required depending on the type of BMP being used (e.g., selenium species, bacteria, nutrients, dissolved oxygen).*

- Influent water to the diversion
- Water Column: selenium (total and dissolved)
- Flow

For Regulated Parties who seek to use credits, at a minimum, monitoring must include the following:

- At the point of discharge:
  - Water Column: selenium (total and dissolved)
  - Flow
- Downstream of the point of discharge:
  - Water Column: selenium (total and dissolved). Water column monitoring conducted under the TMDL compliance monitoring element may be sufficient to satisfy this requirement.
  - Bird Egg Tissue: consistent with the requirements specified in the TMDL compliance monitoring element. Tissue monitoring conducted under the TMDL compliance monitoring element may be sufficient to satisfy this requirement.
  - Fish Tissue: consistent with the requirements specified in the TMDL compliance monitoring element. Tissue monitoring conducted under the TMDL compliance monitoring element may be sufficient to satisfy this requirement.

4. Source Assessment Monitoring

As BMPs needed to achieve these proposed selenium TMDLs are implemented, and as conditions in the subwatershed areas change over time, the collection of selenium source data in each of the subwatershed areas may be necessary to identify and assess significant remaining inputs that do not have BMPs. The need for and selection of additional sample collection locations will be based on the results of Assessment Point and Assessment Area monitoring. Each Regional Monitoring Program must provide for this monitoring element.

5. Other Considerations

In addition to the required elements of the Regional Monitoring Program (TMDL evaluation monitoring, BMP effectiveness monitoring, offset and trading program monitoring, and source assessment monitoring), other elements, such as those listed below, may be considered for inclusion in the Regional Monitoring Program. These elements are not required components of the Regional Monitoring Program, but may be considered as the program develops or added based on consultation with Santa Ana Water Board staff, and may change over time:

- **Selenium Speciation** – The chemical speciation of selenium is a critical consideration in assessing the potential impacts of selenium because the bioavailability and toxicity of selenium are greatly affected by its chemical forms. Additionally, the various chemical forms of selenium bioaccumulate at different rates. Monitoring aimed at collecting data on the chemical speciation of

selenium in the water column should be considered where appropriate. Where selenium speciation is included as part of the assessment area monitoring, the water column samples should be collected within each assessment area at the same location and same time as the fish collection occurs.

- **Additional Monitoring Sites** – Additional sites that provide meaningful data to support refinement of the TMDLs and/or BMP implementation may be considered. These sites would not be used for TMDL evaluation purposes (as detailed under "TMDL Evaluation Monitoring" above), but to support future decision-making.
- **Additional Monitoring Triggers** – As part of the overall adaptive management aspect of these selenium TMDLs, the Regional Monitoring Program may consider triggers where additional monitoring is warranted (e.g., tissue concentrations that are orders of magnitude higher than other samples).

6. Special Studies

Special studies are supplemental to the core, routine components of the Regional Monitoring Program. These studies are intended to answer discrete questions and are not intended to be part of the routine monitoring conducted through the Regional Monitoring Program. These studies can inform and fill data gaps that support refinement and/or modification to these proposed selenium TMDLs. Therefore, any special study conducted during Phase I must be completed consistent with the schedule in **Table 4.c.Se.2 of the Basin Plan (see Tables 6 and 7 in this Order)** in order to be considered during the TMDL Reconsideration.

As part of Phase I of these TMDLs, the following special studies may be implemented by the Regulated Parties or the Santa Ana Water Board:

- **Model Comparison:** This study would provide a comparison of the biodynamic model and a selenium BAF or BSAF model for the Newport Bay watershed. The purpose of the comparison would be to evaluate if the BAF/BSAF model performs equally well for the watershed and to consider revision of the modeling approach utilized for the linkage analysis portion of these selenium TMDLs.
- **Refinement of Site-Specific K_d values:** This study would focus on obtaining algae, fine organic surficial sediment, and suspended particulates from multiple locations in the watershed to aid in refining the partitioning coefficients used in the biodynamic model to predict the probable selenium water column concentrations needed to meet the numeric tissue targets.
- **Special Studies by Regulated Parties:** Additional special studies may be proposed during implementation of Phase I of the proposed selenium TMDLs as funding allows and as deemed necessary. To be considered during the TMDL Reconsideration process, the proposed special studies must meet the following requirements and be submitted to the Santa Ana

Water Board's Executive Officer for review and approval:

- **Purpose** – Identification of the data and/or information gap that will be filled by completion of the special study.
- **Timeframe** – Identification of the timeframe for completing the special study. The special study must be completed within a time period that allows a sufficient amount of time for the results of the special study to be considered during the TMDL Reconsideration process.
- **Link to TMDL Reconsideration** – Identification of the manner in which the results of the special study can be used to revise the TMDLs during the Reconsideration process.

- **Special Studies Requested by the Santa Ana Water Board:** The Santa Ana Water Board may identify the need for additional special studies during the implementation of these selenium TMDLs. Where warranted, the Santa Ana Water Board may issue a CWC §13267 Order. The Order would meet the requirements of CWC §13267 as well as identify the purpose, timeframe, and link to TMDL reconsideration.

7. Quality Assurance and Quality Control Measures

The Regional Monitoring Program must identify the quality assurance and quality control measures (QA/QC) that will be implemented. At a minimum, the Regional Monitoring Program must be consistent with the requirements of California's Surface Water Ambient Monitoring Program (SWAMP).

VII. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS – NOT APPLICABLE

IX. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Federal Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

2. Discharge monitoring data shall be submitted in a format acceptable to the Santa Ana Water Board. Specific reporting format may include preprinted forms and/or electronic media. The results of all monitoring required by this Order shall be reported to the Santa Ana Water Board and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order.

3. All monitoring reports, or information submitted to the Santa Ana Water Board shall be signed and certified in accordance with 40 CFR §122.22 and shall be submitted under penalty of perjury.

4. Five business days prior to any discharge from locations already reported, the Discharger shall notify the Santa Ana Water Board staff by phone or e-mail indicating the date and time of the proposed discharge.

5. Five business days prior to any planned discharge[17] from locations not yet reported, the discharger shall notify the Santa Ana Water Board staff by phone or by a fax letter indicating the following:

   a. Specific type of the proposed wastewater discharge (see listing on Finding 1 of the Order);
   b. The estimated average and maximum daily flow rates;
   c. The frequency and duration of the discharge;
   d. The affected receiving water(s);
   e. A description of the proposed treatment system (if appropriate); and
   f. A description of the path from the point of initial discharge to the ultimate location of discharge (fax a map if possible);

6. Noncompliance Reporting

   a. The discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided to the Executive Officer (951-782-4130) and the Office of Emergency Services (1-800-852-7550) orally within 24 hours from the time the discharger becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times and, if the noncompliance has not been corrected, the anticipated time it is expected to continue, and, steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
   b. Any violation of a maximum daily discharge limitation for any of the pollutants listed in this Order shall be included as information that must be reported within 24 hours.
   c. The Santa Ana Water Board may waive the above required written report on a case-by-case basis.

7. Except for data determined to be confidential under CWA §308, all reports prepared in accordance with the terms of this Order shall be available for public inspection at the offices of the Santa Ana Water Board and the USEPA Regional Administrator. As required by the CWA, effluent data shall not be considered confidential.

8. For Dischargers discharging at a volume equal to or greater than 150,000 gallons

[17] *For those unplanned discharges, as much prior notification as possible is required before any discharge is initiated.*

per day, the Discharger shall submit semi-annual reports that tabulate all measured flows and measured parameters within the most recent six-month period. Where discharges associated with these projects last less than 6 months, a report covering the period of discharges shall be submitted. Copies of these monitoring reports shall be submitted to the Santa Ana Water Board and to the Water Quality Director of the Orange County Water District at P.O. Box 8300, Fountain Valley, CA 92728-8300.

B. Self-Monitoring Reports (SMRs)

1. Monitoring reports shall be submitted by the 30th day of each month following the monitoring period and shall include:

    a. The results of all physical/chemical analyses for the previous month,

    b. The daily flow data,

    c. A copy of the receiving water observation log,

    d. A summary of the month's activities including a report detailing compliance or noncompliance with the task for the specific schedule date, and

2. If no discharge occurs during the previous monitoring period, a letter to that effect shall be submitted in lieu of a monitoring report.

3. At any time during the term of this Order, the Santa Ana Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

C. BMP Strategic Plan Reporting

For Regulated Parties implementing BMP Strategic Plan(s), an annual report must be submitted to the Santa Ana Water Board, consistent with the schedule identified in **Table 4.cSe.2**. BMP Strategic Plan Annual Reports must, at a minimum, address the following:

- **Baseline and Source Control Activities** – Detail the baseline and source control activities implemented during the reporting year.
- **Selenium Reduction Projects** – Detail the selenium reduction projects implemented during the reporting year, including the characteristics, timeframe, and resulting changes in selenium loading and concentration of each project, including as appropriate, any changes in selenium species, and any resultant changes in stream flows/hydrology.
- **Goals** – Evaluate progress in attainment of the goal(s) of the BMP Strategic Plan.

- **Schedule** – Verify that actions were implemented consistent with the approved BMP Strategic Plan schedule.
- **Monitoring Results** – Evaluate the results from the Regional Monitoring Program, including:
  - BMP effectiveness monitoring
  - Progress in attaining WLAs
  - Progress in attaining numeric targets
  - If applicable, results and recommendations from any special studies

- **BMP/Technology Evaluation** – When applicable per the schedule defined as part of an approved BMP Strategic Plan, provide any BMP/technology evaluations. Evaluations can be submitted as a separate, stand-alone report.
- **Adaptive Management** – Based upon the results of the reporting year, propose any minor modifications to the BMP Strategic Plan and/or Regional Monitoring Program, if necessary and appropriate.[18]
- **Data** – Submit data from the Regional Monitoring Program in Excel format to Santa Ana Water Board staff on a semi-annual basis if exceedances of the numeric targets are observed, and annually if exceedances of the numeric targets are not observed. Data must also be uploaded to the California Environmental Data Exchange Network (CEDEN) on an annual basis. If and as a specific need arises, respond to specific data requests by Santa Ana Water Board staff as soon as possible.

D. Individual Action Plan Reporting

Individual Action Plans are provided as part of these selenium TMDLs recognizing that certain discharges may be short-term in nature and that long-term participation in a BMP Strategic Plan may, thus, be inappropriate. Therefore, the reporting schedule will be determined on a case-by-case basis for each Regulated Party[19] opting to implement an Individual Action Plan. As noted above, the reporting schedule must be included as part of the Individual Action Plan, which is subject to approval by the Executive Officer. The Individual Action Plan reports must include the following:

- **Volume Reduction BMPs** – Detail the volume reduction BMPs implemented during the reporting period;
- **Method of Attaining the Final WLAs** – Describe the method of attaining the final WLAs during the reporting period:

[18] *Due to the compressed timeframe for Phase I, it is anticipated that only minor modifications to the BMP Strategic Plans will occur during Phase I. However, a more robust adaptive management process will be required during Phase II of these TMDLs.*

[19] *The term "Regulated Party," as defined in the Selenium TMDLs Implementation Plan, is included in the list of definitions in Attachment A. This definition also specifies the entities considered as "Other NPDES Permittees," and "MS4 Permittees."*

- Participation in an approved Offset and Trading Program, such that the discharge is offset consistent with the requirements of the Offset and Trading Program, including the applicable offset ratios and restrictions pertaining to impacts to downstream beneficial uses; OR
- Implementation of BMPs to attain the final WLAs at the point of discharge; OR
- No discharge (e.g., sewer the discharge).

- **Schedule** – Verify that actions were implemented consistent with the approved Individual Action Plan schedule.
- **Monitoring Results** – Evaluate the results of the Individual Action Plan monitoring program to demonstrate that the selected method to attain the final WLAs was effective.
- **Data** – Submit data from the Individual Action Plan Monitoring Program in Excel format to the Santa Ana Water Board's Executive Officer for review and approval in accordance with the schedule identified in the permittees Individual Action Plan. Data must also be uploaded to the California Environmental Data Exchange Network (CEDEN).